

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SciVerse ScienceDirect

Procedia - Social and Behavioral Sciences 84 (2013) 1736 – 1739

---

---

**Procedia**  
Social and Behavioral Sciences

---

---

3rd World Conference on Psychology, Counselling and Guidance (WCPCG-2012)

## Developmental study of thinking styles in Iranian students university

Emamipour, S<sup>a\*</sup>, Shams Esfandabad, H<sup>b</sup><sup>a</sup> Assistant professor of Islamic Azad University, Central Tehran Branch, Iran<sup>b</sup> Associate professor of Imam Khomeini International University, Iran

---

### Abstract

This study was a developmental cross sectional study of thinking styles among male and female university students: A10 year duration in between (2000, n=150 – 2011, n=150). The thinking styles were evaluated by Sternberg-Wagner Thinking Style Inventory. Results of the study indicated that: The thinking styles between the two studies were significantly different. The means of legislative, judicial, monarchic, hierarchic, external and liberal thinking styles were significantly reduced among the students from year 2000 to year 2011. Results of the study also indicated that the thinking styles among the male and female students were significantly different. The means of executive and monarchic styles were higher in female students, whereas the mean of judicial style was higher in male students. From the results of the study it may be concluded that the thinking styles can be changed over the time.

© 2013 The Authors. Published by Elsevier Ltd. Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/3.0/).

Selection and peer-review under responsibility of Prof. Dr. Huseyin Uzunboylu & Dr. Mukaddes Demirok, Near East University, Cyprus

*Keywords:* Developmental Study, Thinking Styles, University Students;

---

### Introduction

Thinking styles are encompassed by intellectual styles which also embrace cognitive styles, learning styles and problem-solving styles (Zhang & Sternberg, 2006). Intellectual style refers to an individual's propensity to process information and deal with life events. Zhang and Sternberg (2006), depending on Sternberg's prior studies, perceived thinking styles as a wider concept than learning and cognitive styles since they can be applied to both academic and non-academic settings. On the other hand it is stated that cognitive, learning and thinking styles are overlapping as they are used to process the same information; cognitive style is the ways an individual prefers to conceive information, learning style is how the individual prefers to learn that information whereas thinking style is the preference of the individual how to think about the information both during and after learning process.

Sternberg's (1988, 1990, 1997) theory of mental self-government addresses people's thinking styles, which may be used in many settings, including university, home, and community. Using the word *government* metaphorically, Sternberg (1988, 1997) argued that as there are different ways in which people govern society, there are different ways in which people use their abilities. The preferred ways of using one's abilities are thinking styles.

Sternberg (1997) defines a thinking style as a preferred way of thinking. It is not an ability, but a preferred way of expressing or using one or more abilities. Two or more people at the same level of ability may nevertheless have

---

Corresponding author name: \*Emamipour.S. Tel.: +00-21-44271548

E-mail address: [emamipoursd@yahoo.com](mailto:emamipoursd@yahoo.com)

very different styles. Sternberg maintains that styles, like abilities are in large part of a function of the environment and they can be developed. They are also fluid in the sense that different styles may be used in different situations as styles seem to be partly a function of tasks and situations. They choose styles in order to manage themselves with which they are comfortable. Still, they are at least somewhat flexible in their use of styles and try with varying degrees of success to adapt themselves to the stylistic demands of a given situation. Thus, an individual with one preference in one situation may have a different preference in another situation.

According to Sternberg (1988, 1997), 13 thinking styles exist and can be classified into five dimensions: (a) functions (including legislative, executive, and judicial styles), (b) forms (including hierarchical, monarchic, oligarchic, and anarchic styles), (c) levels (including global and local styles), (d) scopes (including internal and external styles), and (e) leanings (including liberal and conservative styles). The characteristics of each of the 13 styles have been described in many previous studies (e.g., Zhang, 2004).

These 13 styles have been reconceptualised into three types based on empirical data (e.g., Zhang & Sternberg, 2005). Type I thinking styles are the ones that tend to be more creativity-generating and that denote higher levels of cognitive complexity, including the legislative (being creative), judicial (evaluative of other people or products), hierarchical (prioritizing one's tasks), global (focusing on the wholistic picture), and liberal (taking a new approach to tasks) styles. Type II thinking styles are styles that suggest a norm-favoring tendency and that denote lower levels of cognitive complexity, including the executive (implementing tasks with given orders), local (focusing on details), monarchic (working on one task at a time), and conservative (using traditional approaches to tasks) styles. The anarchic (working on whatever tasks that come along), oligarchic (working on multiple tasks with no priority), internal (working on one's own), and external (working with others) styles are Type III styles. They may manifest the characteristics of the styles from both Type I and Type II groups, depending on the stylistic demands of a specific task.

Moreover, styles may change with time and with life demands. Thinking styles are at least partly socialized (Sternberg, 1994, 1997), a fact that suggests that, to some extent, they can be modified by the environment in which people reside. Culture plays a role in the evolution of thinking styles. Different cultures emphasize on different thinking styles. For example North America's culture gives more importance to innovation and legislative style and in Japan's culture executive and conservative thinking styles are emphasized.

Much empirical evidence has supported the validity of the theory of mental self-government in both academic (e.g., Kaufman, 2001; Verma, 2001) and nonacademic settings (e.g., Hommerding, 2003; Zhang, 2005).

Zhang (2001) stated that thinking styles are at variance due to age, gender and socioeconomic status and added number of hobbies, job, travel and leadership experience as other factors affecting thinking styles. With respect to the gender, Sternberg (1994) shows that men scores in legislative styles, global and internal styles are more than woman's scores but in judicial style men scores are less than women.

With respect to the effect of the above mentioned variables on thinking styles, the purpose of the present investigation was to examine the differences in thinking styles among Iranian university students in two different periods of time (year 2000 – year 2011).

## **Method**

### *Participants*

The present study was carried out in Tehran, Iran. Participants consisted of 300 students (150 students in year 2000, consisted of 80 female and 70 male students and 150 students in year 2011, consisted of 80 female and 70 male students). The participations' age ranged from 19 to 27 years old ( $M=23.08$ ,  $SD= 2.09$ ). They were randomly selected from the population of university students.

### Instruments

The thinking styles of the participants were evaluated by Sternberg-Wagner (1992) Thinking Style Inventory (TSI). It consists of 8 questions for each of the 13 thinking styles, adding up to a sum of 104 questions. The respondents are asked to rate to what extent each item describes them, from “not at all well” to “extremely well” on a seven-point scale. The reliability studies revealed that the reliabilities of subscales range from .42 (monarchic) to .88 (external), with a .78 median (Zhang & Sternberg, 2000). In addition although reliability coefficients are generally satisfactory, local, monarchic and anarchic subscales were found to reveal lower levels of Cronbach’s alpha coefficients, which were around .30s for anarchic subscale while .50s for both local and anarchic subscales (Zhang, 2003; Zhang, 2009). Therefore some items of these subscales were revised and the result of this revision was a dramatic improvement of local and monarchic subscales’ coefficients (Zhang & Sternberg, 2006).

The inventory was not available in a Persian version. Therefore, it was translated by the authors and a teacher of applied linguistics. The translations were compared and the final version was chosen based on the translators’ judgments. The items of the 13 scales were then quasi randomized.

### Procedure

Individual were selected randomly from different universities in Tehran, in two period times. After they answered the informed consent sheet, the scale was administered to them in group.

### Results

This study investigates whether there are any differences in thinking styles of female and male students after a 10 year duration (year 2000 and year 2011). The means and standard deviations of thinking styles of participants are presented in Table 1.

Table 1- Mean and standard deviation of thinking styles

	Year 2000						Year 2011					
	Female		male		total		Female		male		total	
	M	Std.	M	Std.	M	Std.	M	Std.	M	Std.	M	Std.
legislative	5.59	.94	5.60	.84	5.60	.89	5.23	1.02	5.11	.95	5.17	.99
executive	5.32	.87	4.09	.63	5.73	.83	5.27	.82	5.02	.90	5.15	.86
judicial	5.08	1.01	5.45	.94	5.25	.99	4.89	.91	5.08	.91	4.98	.91
monarchic	4.84	.75	4.58	.85	4.58	.85	4.57	.82	4.45	.95	4.51	.88
hierarchic	4.72	.80	5.47	.85	5.41	1.06	5.31	.82	5.05	1.20	5.19	1.02
oligarchic	5.44	.95	4.13	.90	3.99	1.05	4.09	.87	4.36	1.01	4.22	.94
anarchic	4.79	.83	4.54	.83	4.68	.83	4.54	.95	4.54	.98	4.54	.96
global	4.80	1.25	4.80	1.04	4.80	1.15	4.70	.95	4.62	.92	4.66	.93
local	4.58	1.08	4.52	.98	4.55	1.03	4.39	.95	4.48	.92	4.43	.93
internal	4.25	1.12	4.58	1.10	4.41	1.12	4.35	1.26	4.40	.96	4.37	1.13
external	5.53	1.01	5.38	1.13	5.46	1.07	5.15	1.00	5.09	1.00	5.12	.99
liberal	5.38	1.03	5.47	1.00	5.42	1.02	5.13	1.01	5.24	.95	5.18	.98
conservative	4.47	1.11	4.28	.99	4.38	1.06	4.46	1.13	4.39	.89	4.42	1.02

A two-way MANOVA was computed for time (2000/2011) and sex on all of the dependent variables-thinking styles. Significant differences were found for both time and sex (Wilks Lambda=.877,  $F(13, 284) = 3.06$ ,  $p < .001$  for time and Wilks Lambda=.864,  $F(13, 284) = 3.45$ ,  $p < .001$  for sex). The interaction effect of time and sex on thinking styles was not significant; Wilks Lambda=.952,  $F(13, 284) = 1.11$ ,  $p = .348$ .

The univariate tests indicated significant main effects of time on the legislative  $F(1, 296)=15.48, p<.001$ , judicial  $F(1, 296)=6.36, p<.01$ , monarchic  $F(1, 296)=4.37, p<.05$ , hierarchic  $F(1, 296)=5.26, p<.05$ , external  $F(1, 296)=7.75, p<.01$  and liberal thinking styles  $F(1, 296)=4.42, p<.05$ . As Table 1 reveals, the pattern of means indicated that the means of this thinking styles reduced among the participants from year 2000 to year 2011.

The univariate tests indicated significant main effects of sex on the executive  $F(1, 296)=4.83, p<.05$ , judicial  $F(1, 296)=6.45, p<.01$  and monarchic thinking styles  $F(1, 296)=3.87, p<.05$ . As Table 1 reveals, the pattern of means indicated that the means of executive, and monarchic styles were higher in female participants, whereas the mean of judicial style was higher in male participants.

Generally, the pattern of means of participants' thinking styles in the two periods of time indicated that the means of legislative, judicial, hierarchic, global, external and liberal thinking styles were higher among the participants, so that the participants' thinking styles similar Type I thinking styles introduced by Zhang & Sternberg (2005).

## Discussion

This study confirmed the idea that thinking styles may change over the lifespan (Sternberg, 1994, 1997). Results of the study also can be described by the fact that styles may change with time and with life demands. As the results of other studies reveal thinking styles are at least partly socialized, a fact that suggests that, to some extent, they can be modified by the environment in which people reside. Based on the results of the previous and present study it can be recommended that the effect of time and environmental changes have to be taken into consideration to promote further understanding of thinking styles.

Limitations of this study have to be considered. In order to generalize the results, more investigations of this kind have to be done.

## References

- Hommerding, L. (2003). Thinking style preferences among the public library directors of Florida. Dissertation Abstracts International (Section B): *The Sciences & Engineering*, 63(11B), 5545.
- Kaufman, J. C. (2001). Thinking styles in creative writers and journalists. Dissertation Abstracts International (Section B): *The Sciences and Engineering*, 62(3B), 1069.
- Sternberg, R. J. (1988). Mental self-government: A theory of intellectual styles and their development. *Human Development*, 31, 197-224.
- Sternberg, R. J. (1990). *Metaphors of mind: Conceptions of the nature of intelligence*. New York: Cambridge University Press.
- Sternberg, R. J. (1994). Thinking styles: Theory and assessment at the interface between intelligence and personality. In R. J. Sternberg & P. Ruzgis (Eds.), *Personality and intelligence* (pp. 169-187). New York: Cambridge University Press.
- Sternberg, R. J. (1997). *Thinking styles*. New York: Cambridge University Press.
- Sternberg, R. J., & Wagner, R. K. (1992). *Thinking Styles Inventory* (unpublished test). New Haven, CT: Yale University.
- Verma, S. (2001). A study of thinking styles of tertiary students. *Psycho-Lingua*, 31(1), 15-19.
- Zhang, L.F. (2001). Do styles of thinking matter among Hong Kong secondary school students? *Personality and Individual Differences*, 31 (3), 289-301.
- Zhang, L.F. (2003). Do university students' thinking styles matter in their preferred teaching approaches? *Personality and Individual Differences*, 37 (8), 1551-1564.
- Zhang, L. F. (2004). Do university students' thinking styles matter in their preferred teaching approaches? *Personality and Individual Differences*, 37, 1551-1564.
- Zhang, L. F. (2005). Validating the theory of mental self-government in a non-academic setting. *Personality and Individual Differences*, 38, 1915-1925.
- Zhang, L.F. (2009). Anxiety and thinking styles. *Personality and Individual Differences*, 47 (4), 347-351.
- Zhang, L. F., & Sternberg, R. J. (2000). Are learning approaches and thinking styles related? A study in two Chinese populations. *The Journal of Psychology*, 134, 469-489
- Zhang, L. F., & Sternberg, R. J. (2005). A threefold model of intellectual styles. *Educational Psychology Review*, 17(1), 1-53.
- Zhang, L. F., & Sternberg, R. J. (2006). *The nature of intellectual styles*. Mahwah, NJ: Lawrence Erlbaum Associates.